

Master of Biotechnology Program at the University of Pennsylvania

A joint program from The School of Engineering and Applied Science and The School of Arts and Science

A Cross-Disciplinary Approach



The Professional Master Program, in the emerging field of biotechnology, is under the direction of Dr. Scott Diamond. Using Penn's well-established tradition of interdisciplinary teaching and the unmatched breadth of its faculty, the Masters of Biotechnology draws its strengths from the biology, chemical and biomolecular engineering, and bioengineering departments, along with other classes through the Perelman School of Medicine, Wharton School of Business and other various

courses in different programs. This cross-disciplinary approach gives students a uniquely broad exposure to the entire field of biotechnology.

Beyond physical classes, students can carry out research in one of the many labs on campus through the school or other campus resources including the Hospital of the University of Pennsylvania (HUP), Children's Hospital of Philadelphia (CHOP), Veterans Hospital and important science centers such as the Wistar Institute, Monell Chemical Senses Center, and the Johnson Foundation. Another resource is the University of Pennsylvania's own biomedical research center, the Institute for Medicine and Engineering (IME), which includes the Center for Bioinformatics and the Penn Center for Molecular Discovery.

Highlights

Biotechnology Student Association (BSA)

The BSA is the coordinating student body representing all students enrolled in the program. BSA monitors issues of importance to the student community; sponsors academic, cultural, and social events; and organizes events to enhance the quality of student life. [Webpage](#) [Facebook](#)

Penn Biotechnology Group (PBG)

A student-run, cross-disciplinary club with the mission of promoting education and awareness regarding the many facets of biotechnology spanning both grad and undergrad programs at Penn, including the School of Engineering and Applied Sciences, The Wharton School of Business, the Law School and Medical School. [Website](#)

Applications for the Master of Biotechnology open in October the prior year before matriculation. All deadlines, instructions, and the application itself can be found on our [admissions website](#). All questions can be directed to biotech@seas.upenn.edu.

See what our students are saying about the program on our [Student Testimonials page](#). View and follow us on social media: [Facebook](#), [Twitter](#)



Core Courses and Course Tracks

Eleven credits make up the Masters of Biotechnology degree. The core courses make up six of those in biochemistry, biotechnology I: cellular/molecular biology, biotechnology II: engineering biotechnology, statistics, biotechnology genetic engineering laboratory, and one "free elective." Suggested core courses include:

- Biochemistry
BE 512: Bioengineering III, Biomaterials or BIOL 404: Immunobiology
- Biotechnology I: Cellular/Molecular Biology
BE 553: Tissue Engineering or CBE 555: Nanoscale Systems Biology
- Biotechnology II: Engineering Biotechnology
CBE 554: Engineering Biotechnology or CBE 562: Drug Discovery & Development
- Biotechnology Lab
CBE 580: Biotechnology Laboratory
- Statistics
CBE 508: Probability & Statistics for Biotech
- Free Elective
HCMG863/899: Management and Economics of Pharmaceutical, Biotech and Medical Device Industries or HCMG 853: Medical Devices

Our three parallel curriculum tracks give students the flexibility to tailor their degree to their background, interests, and current career or career goals. These tracks make up the final five credits of the degree and in combination with the core courses, it insures that students get a uniquely broad exposure to the entire field of biotechnology.



• Molecular Biology

BIOT 599: Independent Study (mandatory 2 credits)

Choose three elective courses:

CBE 554: Engineering Biotechnology, CBE 562: Drug Discovery & Development, CBE 564: Drug Delivery, CBE 540: Biomolecular and Cellular Engineering, BIOL 540: Genetic Analysis

• Biopharmaceutical/Engineering Biotech

Choose five elective courses:

BE 505: Quantitative Human Physiology, BIOT 599: Independent Study/Research, CBE 554: Engineering Biotechnology, CBE 562: Drug Discovery & Development, CBE 564: Drug Delivery, CBE 640: Transport Processes I, CBE 557: Stem Cells, Proteomics and Drug Delivery, ENM 510: Foundations of Engineering Mathematics I

• Biomedical Technologies

Choose five elective courses:

BE 502: Biomedical Science to the Marketplace, CBE 564: Drug Delivery, BE 551: Biomicrofluidics, BE 537: Biomedical Image Analysis, BE 510: Biomechanics and Transport, CBE 554: Engineering Biotechnology, CBE 562: Drug Discovery & Development

Please visit our [curriculum page](#) to learn more about our classes and see sample syllabi.

